Applicants maintain that the specification provides sufficient written description for the subject matter of claims 38-43, 48-51, 53-61, 63-69, 74-77, 79-85 and 87-88.

Independent claim 38 is directed to a method for identifying a test compound that modulates chromatin remodeling of a specific DNA sequence within chromatin by providing one or more subunits of a chromatin remodeling complex associated with a domain of a nucleic acid regulatory protein by contacting the subunits with the test compound and determining whether there is an increase or decrease in the interaction between the subunits and the domain of the nucleic acid regulatory protein. Independent claim 63 is directed to a method for identifying a test compound that modulates chromatin remodeling of a specific DNA sequence within chromatin by providing chromatin assembled DNA containing the specific DNA sequence, contacting the chromatin assembled DNA with one or more subunits of a chromatin remodeling complex associated with a domain of a nucleic acid regulatory protein and the test compound and determining the level of chromatin remodeling in the presence or absence of the test compound.

In *In re Edwards*, the C.C.P.A. articulated the function of the written description requirement, stating:

> [The f]unction of [the] description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him; to

> comply with the description requirement, it is not necessary that the application describe the claimed invention in ipsis verbis; all that is required is that it reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventor had possession of the subject matter later claimed by him.

*In re Edwards*, 568 F.2d at 1351-52, 196 U.S.P.Q. at 467 (citations omitted).

To support the alleged lack of adequate written description, the Office Action, at page 5, final paragraph, cites *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). In the recent decision of *Moba v. Diamond Automation*, 325 F.3d 1306, 66 USPQ2d 1429 (Fed. Cir. 2003) the Federal Circuit explicitly distinguished the decision in *Regents of the University of California v. Eli Lilly & Co.* and clarified the written description requirement:

> [C]ase law reflects two applications of [the written description requirement,] . . . "[t]he function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him. . . . In that setting, the written description is the metric against which a subsequently added claim is measured to determine if it is due the priority date of the original patent. . . . The second

> application of the written description requirement is reflected in Regents of the *University of California v. Eli Lilly & Co.*, 119 F.3d 1559 (Fed. Cir. 1997). There, this court invoked the written description requirement in a case without priority issues, [requiring a] precise definition of a DNA sequence in the patent specification. **In more recent cases, however, this court has distinguished *Lilly*. . . . The *Lilly* disclosure rule does not require a particular form of disclosure** because one of skill could determine from the specification that the inventor possessed the invention at the time of filing.

*Id.* at 1319 (Emphasis added).

Similarly, in *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002), the Federal Circuit indicated that neither the specification nor the deposited biological material recited the precise "structure, formula, chemical name, or physical properties" required by *Lilly*. *Id.* at 1324 (quoting *Lilly*, 119 F.3d at 1566). Although the Federal Circuit had initially determined that the specification in *Enzo* did not satisfy the *Lilly* disclosure rule, it revisited the issue and remanded to the district court, instructing the court below as follows:

> On remand the court should determine whether a person of skill in the art would glean from the written description, including information obtainable from the deposits of the claimed sequences, subsequences, mutated variants and mixtures sufficient to

> demonstrate possession of the generic scope of the claims.

*Enzo*, 296 F.3d at 1328.

Similarly, in its first pronouncement following *Enzo*, the Federal Circuit again noted:

> More recently, in *Enzo Biochem*, we clarified that *Eli Lilly* did not hold that all functional descriptions of genetic material necessarily fail as a matter of law to meet the written description requirement; rather, **the requirement may be satisfied if in the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure.**

*Amgen Inc. v. Hoechst Marion Roussel Inc.*, 314 F.3d 1313, 1332, 65 USPQ2d 1385, 1399 (Fed. Cir. 2003)(Emphasis added).

Finally, citing again from the Federal Circuit's most recent pronouncement, the concurring opinion in *Moba* by Judge Rader states:

> **Fortunately, the viability of the *Lilly* rule is on the decline.** After *Enzo*, this court recognized "that *Ely Lilly* did not hold that all functional descriptions of genetic material necessarily fails as a matter of law to meet the written description requirement, rather, **the requirement may be satisfied if in the knowledge of the art the disclosed**

**function is sufficiently correlated to a particular, known structure."**

*Id.* at 1326 (Emphasis added).

The current Office Action asserts that the specification does not provide sufficient description of a representative number of subunits of chromatin remodeling complexes (page 4, top paragraph). Applicants respectfully submit that the skilled person could have envisioned the claimed invention given that numerous chromatin remodeling complexes had been described in the art at the time of filing and are described in the specification (see specification, pages 3 and 4 as well as references cited therein). For example, the specification, starting at page 3, teaches seven chromatin remodeling complexes that had been described at the time of filing, incuding SWI/SNF, RSC, NURF, CHRAC, ACF, NURD and RSF. The specification provides further description by disclosing that all are multi-subunit complexes with molecular weights ranging from 2MDa to 0.5 Mda and that all can disrupt nucleosomal structure in a ATP-dependent manner. The specification provides further description of the SWI/SNF, NURF, ACF complexes as facilitators of factor binding and of the NURF, ACF and RSF complexes as facilitators of transcription from chromatin-assembled genes. Written description also is provided, for example, at page 4, which indicate that FACT is a 230 kDa complex, called FACT (facilitates chromatin transcription), which permits efficient elongation through nucleosomes. Applicants respectfully submit that the specification provides sufficient written description of various

chromatin remodeling complexes to reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventors had possession of the subject matter claimed.

The current Office Action further asserts that the genus of test compounds is not claimed in a specific biochemical or molecular structure that could be envisioned by one skilled in the art at the time of the invention (page 3, final paragraph). With regard to test compounds, the skilled person would have understood that a variety of biomolecules can be used as test compounds to identify a compound that modulates chromatin remodeling. In this regard, the specification teaches at page 12, that compounds useful in the present invention are found among biomolecules including, but not limited to, peptides, polypeptides, peptidomimetics, saccharides, fatty acids, steroids, purines, pyrimidines, derivatives, structural analogs or combinations thereof. It is further disclosed that the compound can be an antibody as well as a small molecule having a molecular weight of more than 50 and less than 5,000 Daltons, such as a hormone. In the same section, further written description is provided by teaching that candidate organic compounds comprise functional groups necessary for structural interaction with proteins, particularly hydrogen bonding, and typically include at least an amine, carbonyl, hydroxyl or carboxyl group, preferably at least two of the functional chemical groups; often comprise cyclical carbon or heterocyclic structures and/or aromatic or polyaromatic structures substituted with one or more of the above functional groups. The specification further teaches that the compounds can be contained

in libraries, for example, synthetic or natural compounds in a combinatorial library, which is useful for the screening of a large number of different compounds. Applicants respectfully submit that the specification provides sufficient written description of various test compounds to reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventors had possession of the subject matter claimed.

Further with regard to test compounds, Applicants respectfully point out that it is not the genus of test compounds being claimed, but rather a method of identifying a test compound that modulates chromatin remodeling of a specific DNA sequence within chromatin. It is respectfully submitted to be a misapplication of the written description requirement to argue that Applicants have to show possession of the very test compounds that the claimed methods are aimed at identifying. If the particular compounds were already known, the purpose for practicing the claimed methods of identifying a test compound would not be useful.

**Rejections under 35 U.S.C. § 112, First Paragraph**

The objection to the specification and corresponding rejection of claims 38-43, 48-51, 53-61, 63-69, 74-77, 79-85 and 87-88 under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the specification so as to enable one skilled in the art to practice the claimed invention is respectfully traversed. Applicants respectfully submit that the

specification enables the full scope of claims 38-43, 48-51, 53-61, 63-69, 74-77, 79-85 and 87-88.

The Office Action states that the specification, while enabling for a method of identifying a test compound that modulates the chromatin remodeling complex SWI/SNF, does not provide enablement for using a genus of one or more subunits of a chromatin remodeling complex (current Office Action, Paper No. 12, page 6, first full paragraph). The legal question of enablement involves an assessment of whether a patent disclosure would have enabled one of ordinary skill in the art at the time the application was filed to make and use the claimed invention without undue experimentation. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986). Applicants respectfully submit that, given the guidance provided by the specification, only standard and well-known techniques not requiring undue experimentation, would have been required to practice the invention methods.

In *Johns Hopkins Univ. v. CellPro, Inc.*, 152 F.3d 1342, 47 U.S.P.Q.2d 1705 (Fed. Cir. 1998), the Federal Circuit clearly stated that routine experimentation does not constitute undue experimentation:

> The test [for undue experimentation] is not merely quantitative, since **a considerable amount of experimentation is permissible**, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to

> enable the determination of how to practice a desired embodiment of the invention claimed.

Id. (Emphasis added) (citing *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d at 1564, 37 U.S.P.Q.2d at 1623); see also *In re Wands*, 858 F.2d at 736-40, 8 U.S.P.Q.2d at 1403-07.

Applicants submit that the specification teaches the skilled person how to identify a test compound that modulates chromatin remodeling of a specific DNA sequence within chromatin by providing one or more subunits of a chromatin remodeling complex associated with a domain of a nucleic acid regulatory protein by contacting the subunits with the test compound and determining whether there is an increase or decrease in the interaction between the subunits and the domain of the nucleic acid regulatory protein. The specification further teaches the skilled person how to identify a test compound that modulates chromatin remodeling of a specific DNA sequence within chromatin by providing chromatin assembled DNA containing the specific DNA sequence, contacting the chromatin assembled DNA with one or more subunits of a chromatin remodeling complex associated with a domain of a nucleic acid regulatory protein and the test compound and determining the level of chromatin remodeling in the presence or absence of the test compound.

The specification provides guidance and teachings to the skilled person by exemplifying routine assays for testing chromatin assembly and transcription (see Example 1). The Office Action acknowledges Applicants teachings with regard to assays

that confirm activation of repressed genes by facilitated protein binding that results from the association between a chromatin remodeling complex with a domain of a nucleic acid regulatory protein as well as the guidance provided with regard to chromatin-based assays adapted for high-throughput screening that are useful in the methods of the invention to identify a test compound that modulates chromatin remodeling of a specific DNA sequence within chromatin. While exemplified with regard to the SWI/SNF chromatin remodeling complex, the skilled person would have been able to apply the teachings to test, for example, other known chromatin remodeling complexes given that all chromatin remodeling complexes modulate nucleosomal structure through association with a nucleic acid regulatory protein. Applicants respectfully submit that it would not have taken undue experimentation for the skilled person, armed with the guidance provided by the specification to practice the methods to identify a test compound that modulates chromatin remodeling of a specific DNA sequence within chromatin.

Contrary to the assertion made at pages 8 and 9 of the current Office Action, Applicants submit that the existence of differences between different chromatin remodeling complexes and corresponding nucleic acid regulatory proteins does not defeat enablement of the claimed invention. The existence of inoperative embodiments does not defeat the enablement of claims where the specification adequately teaches one of skill in the art how to choose operative from inoperative embodiments encompassed by the claims without undue experimentation. *See Atlas Powder Co. v. E. I. duPont de Nemours & Co.*, 750 F.2d 1569,

224 U.S.P.Q. 409 (Fed. Cir. 1984); *In re Sichert*, 566 F.2d 1154, 196 U.S.P.Q. 209 (C.C.P.A. 1977). In this regard, even if the claim scope were to encompass non-operative embodiments, the experimentation needed to determine the operative embodiments and to use those embodiments would not be undue given the guidance provided by the specification and state of knowledge in the art. For example, only art-known techniques that do not constitute undue experimentation would have been required to contact a chromatin assembled DNA with one or more subunits of a chromatin remodeling complex associated with a domain of a nucleic acid regulatory protein and a test compound and to determine the level of chromatin remodeling in the presence or absence of the test compound.

In view of the above, Applicants request removal of the rejection of claims 38-43, 48-51, 53-61, 63-69, 74-77, 79-85 and 87-88 under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the specification so as to enable one skilled in the art to practice the claimed invention.

**Regarding 35 U.S.C. § 112, Second Paragraph**

The rejection of claims 60 and 84 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention, respectfully is traversed. Applicants submit that the term "small molecule" cited by the Examiner as indefinite is clear and definite in view of the specification for the reasons which follow.

The Federal Circuit has had the opportunity to decide a number of § 112, second paragraph issues. It is clear from these decisions that definiteness of claim language must be analyzed, not in a vacuum, but in light of (1) the content of the particular application disclosure, (2) the teachings of the prior art, and (3) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. See, e.g., *In re Marosi*, 710 F.2d 799, 218 U.S.P.Q. 289 (Fed. Cir. 1983); *Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 221 U.S.P.Q. 1 (Fed. Cir. 1984); *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983); and *Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374, 53 U.S.P.Q.2d 1225 (Fed. Cir. 1999) (district court failed to consider the knowledge of one skilled in the art when interpreting the patent disclosure).

> The primary purpose of the definiteness requirement is to ensure that the claims are written in such a way that they give notice to the public of the extent of the legal protection afforded by the patent, so that interested members of the public, e.g., competitors of the patent owner, can determine whether or not they infringe. That determination requires a construction of the claims according to the familiar canons of claim construction.

*All Dental Prodx, LLC v. Advantage Dental Prods.*, 309 F.3d 774, 779-80, 64 USPQ2d 1945, 1949 (Fed. Cir. 2002) (citations omitted).

At page 12, lines 14-15, the specification refers to small molecules as having a molecular weight of more than 50 and less than 5,000 Daltons. With regard to the assertion at page 10 of the current Office Action, that the term "small molecule" is relative and therefore is indefinite, Applicants respectfully submit that this term, viewed in light of the specification, provides sufficient guidance to meet the requirements of paragraph 112. In this regard, words of degree raising indefiniteness issues can be seen clearly in the case, *Exxon v. US*, 265 F.3d 1371, 60 U.S.P.Q.2d 1272 (Fed. Cir. 2001). The patentee used phrases such as "to increase substantially," "for a period sufficient," and "substantial degree of slug flow." The Federal Circuit found that the specification provided sufficient guidance to one of skill in the art to meet the requirements of § 112. "[M]athematical precision is not required--only a reasonable degree of particularity and definiteness." *Id.* at

1381. The Federal Circuit reversed the district court's holdings of invalidity. *See also, Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986), and *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 U.S.P.Q. 81 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987) (the definiteness requirement of the second paragraph of § 112 cannot be used to require more precision in language than the relevant technology permits or is capable of generating.) Applied to the present facts, the recited term "small molecule" is sufficiently precise to render the claimed subject matter clear and definite to the skilled person.

In view of the above, Applicant respectfully requests that the Examiner remove the various grounds for rejecting claims 16-29 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite.

**CONCLUSION**

In light of the Remarks herein, Applicants submit that the claims are now in condition for allowance and respectfully request a notice to this effect. The Examiner is invited to contact the undersigned attorney with any questions related to this application.

Respectfully submitted,

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